

LAND SHELLS FROM VARADERO (CARDENAS) CUBA.

BY JOHN B. HENDERSON.

Varadero is a little settlement of winter cottages planted in the sands of a long narrow peninsula that encloses the Bay of Cardenas. There is a core of pleistocene coral rock more or less densely covered with scrub growth with many cacti as a feature. Besides this there is only the beach sand on the one side and mangrove swamps on the other making altogether a most uninviting field for land-shelling. The following list represents only a few hours collecting but is probably almost a complete census of the region.

<i>Oleacina solidula</i> Pfr.	<i>Cerion sagraianum</i> Pfr.
“ <i>subulata</i> Pfr.	“ “ <i>hologlyptum</i>
<i>Obeliscus homalogyra</i> Shuttl	Pils.
<i>Varicella</i> (Pich.) <i>gracillima</i> Pfr.	<i>Liguus fasciatus</i> Mull.
<i>Thysanophora selenina</i> Gould	<i>Guppya gundlachi</i> Pfr.
“ <i>boothiana</i> Pfr.	<i>Pupoides marginatas</i> Say
<i>Volvidens tichostoma</i> Pfr.	<i>Bifidaria</i> sp.
<i>Cepolis cubensis penicillata</i>	<i>Chondropoma pictum</i> Pfr.
<i>Urocoptis poeyana variegata</i> Pfr.	“ <i>dentatum</i> Say
“ <i>garceana</i> Presas (var)	<i>Alcadia hispida</i> Pfr.
<i>Macroceramus gundlachi</i> Pfr.	<i>Eutrochatella rupestris</i> Pfr.
<i>Microceramus gossei</i> Pfr.	
“ <i>denticulatus</i> Gundl.	

STUDIES IN NAJADES.

BY DR. A. E. ORTMANN.

LASTENA LATA (Rafinesque).

Simpson, Pr. U. S. Mus. 22. 1900 p. 654.—Descr. Cat. 1914 p. 453.

I have collected a number of specimens in Clinch River, at Cleveland, Russel Co., Va., and at St. Paul, Wise Co., Va., among them three gravid females (May 13 and 14, 1913), one

of which (May 13) had glochidia, the others eggs. Additional specimens, the females not charged, were found on Sept. 7 and 8, 1914 in Clinch River at Clinton and Edgemoor, Anderson Co., Tenn.

This shell has been taken by Simpson (l. c.) for a form allied to *Anodonta*, and I have accepted this view, and have treated the genus *Lastena* with the subfamily *Anodontinæ* (Ann. Carnegie Mus. 8. 1912 p. 297); but in the description (p. 298) of the soft parts of the sterile female, I have called attention to the fact, that typical Anodontine characters have *not* been observed in the marsupial gills: there were no traces of lateral water tubes, and no thickened tissue at the edge.

The present specimens show conclusively that *Lastena* does not belong to the *Anodontinæ*, but that it is a member of the subfamily *Unioninæ*. Also the fact that in May females with eggs were found, indicates that this is a tachytictic form (summer breeder), and not a bradytictic, as the *Anodontinæ* are.

My previous description, as far as it concerns the anal and supraanal openings, the branchial opening, the palpi and general features of the gills, is confirmed by the present material. To this, however, should be added the *peculiar shape of the foot*, described by Simpson as: "very large club shaped, capable of great extension". This is a very important character of the genus, and is found in no other North American Naiad, and in this feature *Lastena* can be compared only with the South American *Mycetopoda*, which, however, belongs to an entirely different family. When contracted, the foot does not show its remarkable features; but in life, when extended, it is extremely elongated, at least as long as the shell, of subcylindrical, somewhat compressed shape, with a distal swelling. Apparently, the foot serves as a permanent anchor, and is not withdrawn into the shell under ordinary circumstances, even when the shell is closed, and hence the closed shell is *gaping* at the anterior end.

The marsupium of *Lastena lata* is restricted to the outer gills, and not the whole outer gill is marsupial, but only the middle portion of it, about one half of the length of the gill. The anterior and posterior sections remain non-marsupial. The

charged part is moderately swollen, with the edge remaining sharp. The ova or glochidia form lanceolate, moderately developed placentaë. Glochidia almost semicircular, slightly oblique, inequivalve, with one end somewhat narrower, the other somewhat wider. They are distinctly longer than high. Length 0.19; height 0.15 mm. The lower margin is uniformly and broadly rounded, and there is no trace of a point or a hook.

Color of soft parts (in life) pale, as described previously; placentaë whitish.

Lastena belongs to the subfamily *Unioninae* of the family *Unionidae*, and is most closely allied to *Elliptio*. This is also supported by the shape of the shell and the beak sculpture. However, *Lastena* differs from *Elliptio* (and from all other genera of the *Unioninae*) by several important characters, which are unique, and would possibly entitle it to the rank of a subfamily, in case the *Unioninae* should be elevated to a family. In the shell, the most prominent feature is the reduction of the hinge, a case very rarely observed in the *Unioninae* (the only other one known to me is *Gonidea*). In the soft parts, the structure is like *Elliptio*, but the restriction of the marsupium to the middle part of the other gills is peculiar, and so is the extreme development of the foot. Also the glochidia, although of the general Unionine type, are unusual on account of their obliquity.

Lastena represents a unique specialization of the *Elliptio*-type, and is a very good genus, which, in the systematic arrangement, should follow *Elliptio* and *Unio*.

PUBLICATIONS RECEIVED.

BULLETINS OF AMERICAN PALEONTOLOGY, No. 24. New and interesting Neocene fossils from the Atlantic Coastal Plain, by Axel Olsson. Numerous new species from the Miocene of Virginia to Florida are described. The blue clay marls of the lower James river valley are considered to belong to the Yorktown formation, and not, as some geologists have stated, to the Calvert.